

REMARKS

The applicant appreciates the examiner's thorough examination of the subject application and requests reexamination and reconsideration of the subject application in view of the following remarks.

Concerning Items 1-4 of the subject action, the Examiner requests that the applicant confirm a provisional election of claims made by Frank Occhiuti on February 6, 2003. Applicant hereby confirms the previously-made election of claims 1-24 and 30-36 and acknowledges that claims 20-29 and 37-41 are withdrawn from further consideration. This election is made without traverse.

Concerning Items 5-6 of the subject action, the Examiner rejects claims 1 and 30 under 35 USC 102(b) based on the teachings of Beerman et al. (U.S. Patent No.: 4,179,635).

Applicant claims (in original claim 1):

A stator assembly comprising: (a) a plurality of stator coil assemblies; and (b) a stator coil support structure constructed of a non-magnetic, thermally-conductive material, said stator coil support structure including: an axial passage for receiving a rotor assembly; and a plurality of channels positioned radially about said axial passage, each said channel being configured to receive one or more of said stator coil assemblies.

Applicant respectfully asserts that Beerman fails to disclose element (b) of claim 1 of the applicant's claimed invention, namely "a stator coil support structure constructed of a non-magnetic, thermally-conductive material...". Accordingly, applicant respectfully asserts that Beerman is not a proper basis for a 35 USC §102(b) rejection, as it does not disclose each and every element of claim 1 of the applicant's claimed invention.

Concerning the stator support structure of the Beerman device, Beerman discloses that:

there is shown a synchronous generator according to the invention basically formed of an outer stator lamination stack 1, in the central bore of which a hollow cylindrical holding member 2 of *nonmagnetic material* is received. This holding member 2 is formed with radially inwardly opening slots 3, disposed about the inner periphery thereof, into which an air gap winding is inserted. After the winding is put in place, an inner hollow cylinder 4 of *synthetic material* is

additionally inserted therein, which braces the individual winding bars radially.
See Beerman, Column 2, Lines 45-55 (emphasis added).

As made clear from the above passage, Beerman discloses the use of a “non-magnetic material” for cylindrical holding member 2 and a “synthetic material” for inner hollow cylinder 4. However, Beerman does not disclose the use of a non-magnetic, *thermally conductive* material, as disclosed and claimed by the applicant. Specifically, the applicant's specification discloses that:

stator coil support structure 100 is constructed of a non-magnetic thermally-conductive material, such as: a polymer-based adhesive (e.g., Advanced Thermal Transfer Adhesive, available from the BTech Corporation, 120 Jones parkway, Brentwood, TN 37027); or a graphite-based material (e.g., Grafoil, available from Union Carbide, 39 Old Ridgebury Road, Danbury, CT 06817). These materials have a favorable thermal transfer coefficient of at least 100 Watt / Meter Kelvin. Specifically, Advanced Thermal Transfer Adhesive has a thermal transfer coefficient of between 100 and 450 Watt / Meter Kelvin and Grafoil has a thermal transfer coefficient of between 140 and 375 Watt / Meter Kelvin. By comparison, glass epoxy material has a thermal transfer coefficient of ~0.60 Watt / Meter Kelvin. *See Applicant's Specification, Page 17, Lines 17-29.*

Accordingly, applicant respectfully asserts that Beerman is not a proper basis for a 35 USC §102(b) rejection, as it does not disclose each and every element of claim 1 of the applicant's claimed invention. Therefore, applicant respectfully asserts that claim 1 of the subject application is patentable over Beerman. Additionally, applicant respectfully asserts that claims 2-8 are also patentable, as they depend upon a patentable base claim.

Concerning claim 30, applicant claims (in original claim 30):

A stator assembly comprising: (a) a plurality of stator coil assemblies; (b) a magnetic annular assembly; and (c) a plurality of non-magnetic, thermally-conductive heat sinking members positioned radially about said magnetic annular assembly, thus forming a plurality of channels, each being configured to receive one or more of said stator coil assemblies

Applicant respectfully asserts that Beerman fails to disclose element (c) of claim 30 of the applicant's claimed invention, namely “a plurality of non-magnetic, thermally-conductive heat sinking members positioned radially about said magnetic annular assembly...”.

For the reasons discussed above, applicant respectfully asserts that Beerman is not a proper basis for a 35 USC §102(b) rejection, as it does not disclose each and every element of

claim 30 of the applicant's claimed invention. Therefore, applicant respectfully asserts that claim 30 of the subject application is patentable over Beerman. Additionally, applicant respectfully asserts that claims 31-36 are also patentable, as they depend upon a patentable base claim.

Concerning Item 7 of the subject action, the Examiner rejects claims 1, 5, 30, and 33 under 35 USC §102(b) based on the teachings of Boer et al (U.S. Patent No.: 5,053,663).

As stated above, applicant claims (in original claim 1):

A stator assembly comprising: (a) a plurality of stator coil assemblies; and (b) a stator coil support structure constructed of a non-magnetic, thermally-conductive material, said stator coil support structure including: an axial passage for receiving a rotor assembly; and a plurality of channels positioned radially about said axial passage, each said channel being configured to receive one or more of said stator coil assemblies.

Applicant respectfully asserts that Boer fails to disclose element (b) of claim 1 of the applicant's claimed invention, namely "a stator coil support structure constructed of a non-magnetic, thermally-conductive material...". Accordingly, applicant respectfully asserts that Boer is not a proper basis for a 35 USC §102(b) rejection, as it does not disclose each and every element of claim 1 of the applicant's claimed invention.

Concerning the stator support structure of the Boer device, Boer discloses that:

stator lamination packet having an inner periphery defining a stator bore, a laminated screening packet with an inner periphery and lamination segments formed of magnetic material, and a slot and tooth system disposed on and connected to the inner periphery of the screening packet, the slot and tooth system being at least partly formed of nonmagnetic material and having successive slot teeth defining bar receiving slots with a slot bottom. *See Boer, Abstract, lines 1-9.*

As made clear from the above passage, Boer discloses the use of a "magnetic material" for lamination segments and a "non-magnetic material" for a slot and tooth system. However, Boer does not disclose the use of a non-magnetic, thermally conductive material, as disclosed and claimed by the applicant.

Accordingly, applicant respectfully asserts that Boer is not a proper basis for a 35 USC §102(b) rejection, as it does not disclose each and every element of claim 1 of the applicant's claimed invention. Therefore, applicant respectfully asserts that claim 1 of the subject

application is patentable over Boer. Additionally, applicant respectfully asserts that claims 2-8 are also patentable, as they depend upon a patentable base claim.

Concerning claim 30, applicant claims (in original claim 30):

A stator assembly comprising: (a) a plurality of stator coil assemblies; (b) a magnetic annular assembly; and (c) a plurality of non-magnetic, thermally-conductive heat sinking members positioned radially about said magnetic annular assembly, thus forming a plurality of channels, each being configured to receive one or more of said stator coil assemblies

Applicant respectfully asserts that Boer fails to disclose element (c) of claim 30 of the applicant's claimed invention, namely "a plurality of non-magnetic, thermally-conductive heat sinking members positioned radially about said magnetic annular assembly..."

For the reasons discussed above, applicant respectfully asserts that Boer is not a proper basis for a 35 USC §102(b) rejection, as it does not disclose each and every element of claim 30 of the applicant's claimed invention. Therefore, applicant respectfully asserts that claim 30 of the subject application is patentable over Boer. Additionally, applicant respectfully asserts that claims 31-36 are also patentable, as they depend upon a patentable base claim.

Concerning Items 8-9 of the subject action, the Examiner rejects claim 2 under 35 USC §103(a) based on the teachings of Boer in view of Albright et al (U.S. Patent No.: 4,330,726), asserting that "Boer teaches every aspect of the invention except [sic] ground plane assembly. Albright teaches a fiberglass tie to provide grounding protection (col. 6, lines 14-20)."

As stated above, applicant respectfully asserts that Boer fails to disclose element (b) of claim 1 of the applicant's claimed invention, namely "a stator coil support structure constructed of a non-magnetic, thermally-conductive material...". As claim 2 directly depends upon claim 1, applicant respectfully asserts that the combination of Boer and Albright is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 2 of the applicant's claimed invention.

Concerning Item 10 of the subject action, the Examiner rejects claims 3, 4, 31, and 32 under 35 USC §103(a) based on the teachings of Boer in view of Denk (U.S. Patent No.: 4,709,180), asserting that "Boer teaches every aspect of the invention except axial cooling passages for circulation of a cooling liquid. Denk [sic] a cooling liquid circulated through the axial cooling passages of the magnetic core 90."

As stated above, applicant respectfully asserts that Boer fails to disclose element (b) of claim 1 of the applicant's claimed invention, namely "a stator coil support structure constructed of a non-magnetic, thermally-conductive material...". As claim 3 directly depends upon claim 1, applicant respectfully asserts that the combination of Boer and Denk is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 3 of the applicant's claimed invention. Further, as claim 4 indirectly depends upon claim 1, applicant respectfully asserts that the combination of Boer and Denk is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 4 of the applicant's claimed invention.

As stated above, applicant respectfully asserts that Boer fails to disclose element (c) of claim 30 of the applicant's claimed invention, namely "a plurality of non-magnetic, thermally-conductive heat sinking members positioned radially about said magnetic annular assembly...". As claim 31 directly depends upon claim 30, applicant respectfully asserts that the combination of Boer and Denk is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 31 of the applicant's claimed invention. Further, as claim 32 indirectly depends upon claim 30, applicant respectfully asserts that the combination of Boer and Denk is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 32 of the applicant's claimed invention.

Concerning Item 11 of the subject action, the Examiner rejects claims 7, 8, 35, and 36 under 35 USC §103(a) based on the teachings of Boer in view of Laskaris (U.S. Patent No.: 4,385,248), asserting that "Boer teaches every aspect of the invention except, the wedge material 2 being graphite based and the epoxy filler between the coil assembly and the coil support."

As stated above, applicant respectfully asserts that Boer fails to disclose element (b) of claim 1 of the applicant's claimed invention, namely "a stator coil support structure constructed of a non-magnetic, thermally-conductive material...". As claim 7 indirectly depends upon claim 1, applicant respectfully asserts that the combination of Boer and Laskaris is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 7 of the applicant's claimed invention. Further, as claim 8 directly depends upon claim 1, applicant respectfully asserts that the combination of Boer and Laskaris is not a proper basis for a

35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 8 of the applicant's claimed invention.

As stated above, applicant respectfully asserts that Boer fails to disclose element (c) of claim 30 of the applicant's claimed invention, namely "a plurality of non-magnetic, thermally-conductive heat sinking members positioned radially about said magnetic annular assembly...". As claim 35 indirectly depends upon claim 30, applicant respectfully asserts that the combination of Boer and Laskaris is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 35 of the applicant's claimed invention. Further, as claim 36 directly depends upon claim 30, applicant respectfully asserts that the combination of Boer and Laskaris is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 36 of the applicant's claimed invention.

Concerning Item 12 of the subject action, the Examiner rejects claims 6 and 34 under 35 USC §103(a) based on the teachings of Boer in view of Laskaris and Mariner (U.S. Patent No.: 5,863,467), asserting that "Boer and Laskaris teach every aspect of the invention except, the epoxy being a polymer. Mariner teaches a polymer graphite material which has good thermal conductivity."

As stated above, applicant respectfully asserts that Boer fails to disclose element (b) of claim 1 of the applicant's claimed invention, namely "a stator coil support structure constructed of a non-magnetic, thermally-conductive material...". As claim 6 indirectly depends upon claim 1, applicant respectfully asserts that the combination of Boer, Laskaris, and Mariner is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 6 of the applicant's claimed invention.

As stated above, applicant respectfully asserts that Boer fails to disclose element (c) of claim 30 of the applicant's claimed invention, namely "a plurality of non-magnetic, thermally-conductive heat sinking members positioned radially about said magnetic annular assembly...". As claim 34 indirectly depends upon claim 30, applicant respectfully asserts that the combination of Boer, Laskaris, and Mariner is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 34 of the applicant's claimed invention.

Concerning Item 13 of the subject action, the Examiner rejects claims 9, 13, and 19 under 35 USC §103(a) based on the teachings of Boer in view of Cooper et al (U.S. Patent No.: 4,123,676), asserting that "Boer teaches every aspect of the invention except, a superconducting rotor. Cooper teaches a refrigerated, superconducting rotor."

Applicant claims (in original claim 9):

A superconducting rotating machine comprising: (a) a stator assembly including a plurality of stator coil assemblies, and (b) a stator coil support structure constructed of a non-magnetic, thermally-conductive material, said stator coil support structure including: an axial passage for receiving a rotor assembly; and a plurality of channels positioned radially about said axial passage, each said channel being configured to receive one or more of said stator coil assemblies; and a rotor assembly configured to rotate within said stator assembly, said rotor assembly including an axial shaft, and at least one superconducting rotor winding assembly.

Applicant respectfully asserts that Boer fails to disclose element (b) of claim 9 of the applicant's claimed invention, namely "a stator coil support structure constructed of a non-magnetic, thermally-conductive material...". Accordingly, applicant respectfully asserts that the combination of the teachings of Boer and Cooper is not a proper basis for a 35 USC §103(a) rejection, as the combinations does not disclose each and every element of claim 9 of the applicant's claimed invention. Therefore, applicant respectfully asserts that claim 9 of the subject application is patentable over the combination of the teachings of Boer and Cooper. Additionally, applicant respectfully asserts that claims 10-19 are also patentable, as they depend upon a patentable base claim.

Concerning Item 14 of the subject action, the Examiner rejects claim 10 under 35 USC §103(a) based on the teachings of Boer and Cooper in view of Albright, asserting that "Boer and Cooper teach every aspect of the invention except ground plane assembly. Albright teaches a fiberglass tie to provide grounding protection (col. 6, lines 14-20)."

As stated above, applicant respectfully asserts that Boer fails to disclose element (b) of claim 9 of the applicant's claimed invention, namely "a stator coil support structure constructed of a non-magnetic, thermally-conductive material...". As claim 10 directly depends upon claim 9, applicant respectfully asserts that the combination of Boer, Cooper, and Albright is not a

proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 10 of the applicant's claimed invention.

Concerning Item 15 of the subject action, the Examiner rejects claims 11 and 12 under 35 USC §103(a) based on the teachings of Boer and Cooper in view of Denk, asserting that "Boer and Cooper teach every aspect of the invention except axial cooling passages for the circulation of a cooling fluid. Denk [sic] a cooling liquid circulated through the axial cooling passages of the magnetic core 90."

As stated above, applicant respectfully asserts that Boer fails to disclose element (b) of claim 9 of the applicant's claimed invention, namely "a stator coil support structure constructed of a non-magnetic, thermally-conductive material...". As claim 11 directly depends upon claim 9, applicant respectfully asserts that the combination of Boer, Cooper, and Denk is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 11 of the applicant's claimed invention. Further, as claim 12 indirectly depends upon claim 9, applicant respectfully asserts that the combination of Boer, Cooper, and Denk is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 12 of the applicant's claimed invention.

Concerning Item 16 of the subject action, the Examiner rejects claims 15 and 16 under 35 USC §103(a) based on the teachings of Boer and Cooper in view of Laskaris, asserting that "Boer and Cooper teach every aspect of the invention except, the wedge material 2 being graphite based and epoxy filler between the coil assembly and the coil support."

As stated above, applicant respectfully asserts that Boer fails to disclose element (b) of claim 9 of the applicant's claimed invention, namely "a stator coil support structure constructed of a non-magnetic, thermally-conductive material...". As claim 15 indirectly depends upon claim 9, applicant respectfully asserts that the combination of Boer, Cooper, and Laskaris is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 15 of the applicant's claimed invention. Further, as claim 16 directly depends upon claim 9, applicant respectfully asserts that the combination of Boer, Cooper, and Laskaris is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 16 of the applicant's claimed invention.

Concerning Item 17 of the subject action, the Examiner rejects claim 14 under 35 USC §103(a) based on the teachings of Boer, Cooper, and Laskaris in view of Mariner, asserting that "Boer, Cooper, and Laskaris teach every aspect of the invention except, the epoxy being a polymer. Mariner teaches a polymer graphite material which has good thermal conductivity.

As stated above, applicant respectfully asserts that Boer fails to disclose element (b) of claim 9 of the applicant's claimed invention, namely "a stator coil support structure constructed of a non-magnetic, thermally-conductive material...". As claim 14 indirectly depends upon claim 9, applicant respectfully asserts that the combination of Boer, Cooper, Laskaris, and Mariner is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 14 of the applicant's claimed invention.

Concerning Item 18 of the subject action, the Examiner rejects claims 17 and 18 under 35 USC §103(a) based on the teachings of Boer and Cooper in view of Gamble et al (U.S. Patent No.: 5,777,420), asserting that "Boer and Cooper teach every aspect of the invention except, the superconductive material being HTS material. Gamble teaches an HTS material for rotor windings."

As stated above, applicant respectfully asserts that Boer fails to disclose element (b) of claim 9 of the applicant's claimed invention, namely "a stator coil support structure constructed of a non-magnetic, thermally-conductive material...". As claim 17 directly depends upon claim 9, applicant respectfully asserts that the combination of Boer, Cooper, and Gamble is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 17 of the applicant's claimed invention. Further, as claim 18 indirectly depends upon claim 9, applicant respectfully asserts that the combination of Boer, Cooper, and Gamble is not a proper basis for a 35 USC §103(a) rejection, as the combination does not disclose each and every element of claim 18 of the applicant's claimed invention.